

Application No. 10/075,017  
Attorney Docket No. P-009-RC2  
Customer No. 27038  
Page 4 of 9

### III. REMARKS

Applicants respectfully request reconsideration of this application in view of the above amendments and the following remarks.

#### 1. Status of the Claims

Claims 64-68 are pending in this application. New Claims 69 and 70 have been added in this response. Accordingly, upon entry of the amendments, Claims 64-70 will be pending for examination on the merits.

#### 2. Summary of the Amendments

Claim 64 has been amended in step (a) to replace "identifying" with "selecting." Support for this amendment is found, for example, at page 80, lines 21-23. Claim 64 has also been amended in steps (a), (b) and (c) to replace "a" with "the" to clarify the antecedent basis for particular terms as kindly suggested by the Examiner. Claims 64 and 66 have also been amended to delete the term "compound" or "compounds" after the term "ligand."

Additionally, Claim 65 has been amended to recite "to determine the binding affinity of the compound for the cell membrane transporter" in place of "to determine its affinity for the cell membrane transporter." Support for this amendment is found, for example, on page 86, line 28 to page 87, line 03.

New Claims 69 and 70 have been added. Support for these claims is found, for example, on page 58, line 19 to page 59, line 11.

Entry of these amendments is respectfully requested.

#### 3. Restriction Requirement/Election of Species

Applicants respectfully acknowledge that the restriction/election requirement for Claims 64-68 has been made final and that Claim 64 has been withdrawn, in part, from consideration under 35 U.S.C. §121.

Should no prior art be found that anticipates or renders obvious the elected species, Applicants respectfully request that the search be extended and the withdrawn subject matter of Claim 64 be examined on the merits.

Application No. 10/075,017  
Attorney Docket No. P-009-RC2  
Customer No. 27038  
Page 5 of 9

4. Objection to the Claims

Claims 64-68 have been objected to, in part, for depending from Claim 64, which is withdrawn, in part, as drawn to non-elected subject matter. Applicants respectfully request that, if no prior art is found that anticipates or renders obvious the elected species of Claim 64, the search be extended to include the withdrawn subject matter of Claim 64 and that Claim 64 be examined in its entirety.

5. Rejections Under 35 U.S.C. §112, Second Paragraph

Claims 64-68 have been rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner has indicated that there is uncertain antecedent basis for the terms "a ligand compound" and "a cellular receptor" in line 20; "a linker compound" in line 26; and "a library of compounds" in line 32.

In response, Applicants have amended the above-identified terms to replace "a" with "the" and to delete the unnecessary term "compounds." In view of these amendments, Applicants believe the antecedent basis for these terms is now clear. Accordingly, this rejection may be withdrawn.

Additionally, the Examiner has indicated that, in Claim 65, it is unclear whether the phrase "its affinity" refers to the affinity of the "compound" or the "library." In response, Applicants have amended Claim 65 to clearly indicate that the binding affinity of the compound is being determined. Accordingly, this rejection may also be withdrawn.

6. Rejections Under 35 U.S.C. §112, First Paragraph

A. Written Description Requirement

Claims 64-68 have been rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, the Examiner has indicated that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. For the following reasons, this rejection is respectfully traversed.

The Examiner's rejection is based, in part, on the following statements:

BEST AVAILABLE COPY

Application No. 10/075,017  
Attorney Docket No. P-009-RC2  
Customer No. 27038  
Page 6 of 9

The skilled artisan cannot envision the detailed chemical structure of the encompassed genera of all ligands that bind to a cell membrane transporter or to cell membrane transporters that are ion channels or sodium ion channels, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The ligand themselves are required. See Fiers v. Revel, 25 USPQ2d at 1606 (CAFC 1993) and Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016. One cannot describe what one has not conceived. See Fiddes v. Baird, 30 USPQ2d 1481, at 1483 (finding claims directed to *mammalian* FGF's were found to be unpatentable due to lack of written description for that broad class, where the specification provided only the *bovine* sequence). Office Action at pages 5-6 (emphasis in original).

By these statements, it appears that there is some confusion regarding what is meant by the term "identifying" as used in step (a). As used by Applicants, this term is intended to mean that one skilled in the art selects a ligand that binds to a cell membrane transporter for use as a starting material for the presently claimed method. To clarify what is meant, Applicants have amended Claim 64 to replace "identifying" with "selecting."

Thus, to practice the present invention, one skilled in the art merely selects a ligand as a starting material from, for example, the published literature. In this regard, to provide guidance and to comply with the written description requirement, Applicants provided in the specification as originally filed an extensive list of known ligands that bind to cell membrane transporters. Specifically, Table 1 on pages 214-215 and Table 6 on pages 221-225 of the specification give hundreds, if not thousands, of specific examples of known ligands for at least 15 different types of cell membrane transporters.

Like any other method claim, Applicants are not required to specifically list every possible starting material in the specification that could ever be used in the method in order to meet the written description requirement. All that is required is that Applicants provide adequate representative examples of suitable starting materials. Given the extensive disclosure in Applicants' specification of many hundreds of suitable ligands for many types of cell membrane transporters, one skill in the art would clearly recognize that the inventors had possession of the claimed method at the time the application was filed. Accordingly, the written description requirement of 35 U.S.C. §122 has been satisfied and this rejection may be withdrawn.

Application No. 10/075,017  
Attorney Docket No. P-009-RC2  
Customer No. 27038  
Page 7 of 9

B. Enablement Requirement

Claims 64-68 have been rejected under 35 U.S.C. §112, first paragraph, because the specification allegedly does not enable any person skilled in the art to make and use the invention commensurate in scope with the claims. Specifically, the Examiner has indicated that the specification, while being enabling for ligands taught by the instant specification, does not reasonably provide enablement for all ligands that bind to a cell membrane transporter. For the following reasons, this rejection is respectfully traversed.

Again, from the Office Action, it appears that there is some confusion regarding what is meant by the term "identifying" as used in step (a). Specifically, the Examiner has indicated that the presently claimed method somehow requires the "experimental discovery of new ligands to any membrane transporter." (Office Action at page 7). This is clearly not necessary or required. By way of illustration, a new method for oxidizing an alcohol does not require the experimental discovery of new alcohols or the explicit disclosure of every possible alcohol that could ever be used in the new method. All that is required is that the skilled artisan be given sufficient information to allow them to select a starting material. In the present case, this requirement is clearly met by the extensive list of known ligands that bind to cell membrane transporters provided in the tables of the specification.

Additionally, the Examiner has indicated that "the Specification does not disclose a single screening assay for identifying a ligand compound which binds to a cell membrane transporter, as recited in claim 64." Office Action at pages 8-9. Again, however, the Examiner is presuming that one skilled in the art must somehow rediscover that which is already known in order to practice the presently claimed method. Compounds that bind to cellular receptors are already known in the art. To practice the claimed method, the skilled artisan can merely select any such compound. Moreover, Applicants do, in fact, make reference to known screening assays in the specification. For example, Table 3 on pages 217-218 lists exemplary assays for at least 10 types of cell membrane transporters. Similar assays are widely known and routinely used by those skilled in the art.

In summary, Applicants' specification gives sufficient information to enable one skilled in the art to select a ligand that binds to a cell membrane transporter for use in the presently claimed method. Accordingly, withdrawal of the rejection of Claims 36-40 under 35 U.S.C. §112, first paragraph, is respectfully requested.

Application No. 10/075,017  
Attorney Docket No. P-009-RC2  
Customer No. 27038  
Page 8 of 9

7. Rejections Under 35 U.S.C. §103

Claims 64-68 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Portoghese, *J. Med. Chem.*, 1992, 35, 1927-1937, Joslyn et al., *J. Med. Chem.*, 1988, 31, 1489-1492, and Ackerman et al., *New England Journal of Medicine*, 1997, 336(22), 1575-1586. For the following reasons, this rejection is respectfully traversed.

To establish a *prima facie* case of obviousness, the Examiner must make three showings:

(1) First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references in a manner that produces the claimed invention. *See, In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

(2) Second, the Examiner must show that the proposed modification of the prior art references had a reasonable expectation of success as determined from the vantage point of one of ordinary skill in the art. *See Yamanouchi Pharm. Co., Ltd. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1343, 56 USPQ2d 1641, 1644 (Fed. Cir. 2000). Both the motivation to modify the prior art references, as well as the expectation of success, must come from the prior art, not from applicant's own disclosure. *See, In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

(3) Lastly, the Examiner must show that the prior art reference or combination of references teach or suggest all the limitations of the claims. *See, In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

If the Examiner fails in any of these requirements, he has not established a *prima facie* case of obviousness, and without more, the applicant is entitled to a patent. *See, e.g., Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444 (citing *In re Grabiak*, 769 F.2d 729, 733, 226 USPQ 870, 873 (Fed. Cir. 1985)).

In the present case, the Examiner has combined (i) the teachings of the Portoghese reference regarding opioid dimers having a linker of the formula  $-C(O)-R-C(O)-$ , wherein R is  $CH_2CH_2$  or  $CH=CH$ ; with (ii) the teachings of the Joslyn reference regarding bivalent dihydropyridine derivatives that bind to a calcium ion channel; and (iii) the teachings of the Ackerman reference regarding drugs that are ligands that bind to sodium ion channels, to arrive at methods of producing dimers of ligands having a linker of the formula  $-C(O)-R-C(O)-$  that bind to cellular membrane transporters, including

Application No. 10/075,017  
Attorney Docket No. P-009-RC2  
Customer No. 27038  
Page 9 of 9

sodium ion channels. However, this premise fails to take into consideration the fact that, even when combined, these references do not teach or suggest all the limitations of the present claims.

More specifically, the claimed invention is directed to a method of preparing a library of compounds in which the ligands of the compounds in the library are attached to the linker at different positions of the ligand. In this regard, step (b) of the present method requires that the library be prepared using ligands which each have a reactive functional group at a different position compared to the other ligands used to prepare the library.

In contrast, the Portoghese and Joslyn references disclose compounds that are all attached at the same position of the ligand, i.e., see compounds 12, 13 and 14 of Portoghese on pages 1932-33, and compounds 9-17 of Joslyn on page 1490. The Ackerman reference does not disclose dimers of any type. Therefore, when combined these reference do not teach or suggest the presently claimed method which requires that the library be prepared using ligands which have reactive functional groups at a different positions. In particular, while the Portoghese and Joslyn references may provide some motivation to explore the area of dimers, these references clearly do not provide any specific motivation to modify their teachings in a manner to arrive at the presently claimed invention.

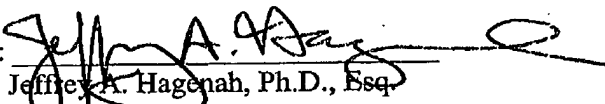
Accordingly, since the cited references do not establish a *prima facie* case of obviousness, the rejection of Claims 36-40 under 35 U.S.C. §103(a) may be withdrawn.

#### 8. Conclusion

Reconsideration of this application in view of the above amendments and remarks is respectfully requested. Should the Examiner have any questions regarding this paper or should any issues arise that can be resolved by telephone, the Examiner is encouraged to telephone the undersigned attorney for Applicants at (650) 808-6406.

Respectfully submitted,  
THERAVANCE, INC.

Date: January 20, 2005  
THERAVANCE, INC.  
901 Gateway Boulevard  
South San Francisco, CA 94080  
Phone: (650) 808-6000  
Fax: (650)-808-6078

By:   
Jeffrey A. Hagenah, Ph.D., Esq.  
Reg. No. 35,175  
Telephone No. (650) 808-6406